2014

2014 Transformations Program

State University of New York at Cortland

TRANSFORMATIONS

A Student Research and Creativity Conference

Schedule of Events and Abstracts

April 25, 2014

SUNY Cortland

Transformations: A Student Research and Creativity Conference

April 25, 2014
Sperry Center
SUNY Cortland

Schedule of Events

12:30-1:20 p.m.	Keynote Address Sperry Center, Room 105 *"Multidisciplinary Solutions to 21st Century Environmental Challenges: Lessons from Sustainable Agriculture and Conservation Grazing"* **Gary S. Kleppel '73**, Ph.D. Professor of Biological Sciences; Director of Biodiversity, Conservation & Policy Program University of Albany
1:30-2:30 p.m.	Concurrent Sessions I
2:30-3 p.m.	Poster Session A Sperry Center, 1st Floor Hallway
3-4 p.m.	Concurrent Sessions II
4-4:30 p.m.	Poster Session B Sperry Center, 1st Floor Hallway
4:30-5:30 p.m.	Concurrent Sessions III

Refreshments will be available 2:30-4:30 p.m. in Sperry Center, first floor food service area.
PLEASE NOTE: Food and beverages are NOT allowed in classrooms.

Cover design by Lauren Abbott, New Media Design major.

Transformations: A Student Research and Creativity Conference is an event designed to highlight and encourage scholarship among SUNY Cortland students. Our scholarly work is crucial to who and what we are as individuals and as an institution. This day is an attempt to help our students and the general public understand and appreciate what we do, to draw students into the intellectual life and the excitement of scholarly work, and to publicize the accomplishments of our students.

Presentations will be made by students and faculty mentors. In addition to attendance by members of the campus community, invitations have been extended to area high school students and their advisors, our elected representatives, and to the Cortland community at large.

Support for *Transformations* has been received from the President's Office, the Provost and Vice President for Academic Affairs Office, and Auxiliary Services Corporation.

Our appreciation to the Transformations Committee:

R. Bruce Mattingly, Arts & Sciences (Chair)

Martine Barnaby, Art and Art History

Philip Buckenmeyer, Kinesiology

Patricia Conklin, Biological Sciences

Daniel M. Harms, Library

David Miller, Geography

Lisa Mostert, Campus Technology Services

Charlotte Pass, Literacy

Kevin Pristash, Campus Activities

Special thanks to the Student Alumni Association
for providing volunteers for *Transformations*.

KEYNOTE ADDRESS

12:30-1:20 p.m.

Sperry Center, Room 105

"Multidisciplinary Solutions to 21st Century Environmental Challenges: Lessons from Sustainable Agriculture and Conservation Grazing"

***Gary S. Kleppel '73**, Ph.D.*

Dr. Kleppel is professor of Biology and, since 2000, director of the graduate program in Biodiversity Conservation and Policy at the University at Albany, SUNY. He earned his Ph.D. in Biology (marine ecology) from Fordham University in 1979 and conducted his postdoctoral work in oceanography at the University of Southern California. Kleppel's research on the ocean's food webs spanned nearly two decades. Then, in 1994, he was appointed chief scientist for NOAA's (National Oceanic and Atmospheric Administration) Land-Use Coastal Ecosystem Study, which sought to understand how suburban development in the Southeast would affect the region's coastal ecosystems. That study led Kleppel to focus more fully on land use and eventually to turn his attention toward his current interests, sustainable agriculture and the ecology of human-dominated landscapes.

For the past decade, Dr. Kleppel and his wife have operated a small farm, Longfield, about 15 miles west of Albany. They produce grass-fed lamb, wool, free range poultry and eggs, and artisan breads. The Kleppels focus on sustainable methods of food and fiber production. Energy is provided by photovoltaics, pastures are managed to enhance soil health and biodiversity, and livestock are treated humanely and in a manner that does not degrade the ecological integrity of the landscape.

Dr. Kleppel is author of nearly 100 papers, books and technical reports. His forthcoming volume, *The Emergent Agriculture- Farming, Sustainability and the Return of the Local Economy*, describes the emerging paradigm in food production and its environmental and economic impacts. It will be published by New Society Publishers in the summer of 2014.

CONCURRENT SESSIONS I

1:30-2:30 p.m.

Sperry Center, Room 106

Moderator: Henry Steck, Distinguished Service Professor, Political Science

What the EU Is & What SUNYMEU Is!

Presenter: *Michael Myones, Senior, Political Science*
Faculty Mentor: *Henry Steck, Political Science*

One Hundred Years after Sarajevo: Serbia, Europe and the Vexed Issue of EU Enlargement

Presenter: *Daniel Bretscher, Senior, Political Science*
Faculty Mentor: *Henry Steck, Political Science*

The EU and Economic Policy on a Global Scale: The Challenge of China

Presenter: *Justin St. Louis, Senior, Political Science*
Faculty Mentor: *Henry Steck, Political Science*

Still Rejected – Still on the Margins: Can the EU Solve the "Problem" of the Roma?

Presenter: *Stephen Best, Sophomore, Political Science*
Faculty Mentor: *Henry Steck, Political Science*

Sperry Center, Room 204

Moderator: Victoria Boynton, Professor, English
David Franke, Professor, English

Writers Read: Professional Writers Present Their Work

Presenters:
Katie Austin, Senior, Professional Writing
Anna Coppola, Senior, Professional Writing
Jonathan Diaz, Senior, English
Mark Hahn, Senior, Professional Writing
Rebecca Laughlin, Senior, Professional Writing
Samuel Marcucci, Junior, Professional Writing
Madison Messina, Senior, Professional Writing
Lonnie Morris, Senior, Professional Writing
Aaron Proia, Senior, Professional Writing
Allison Talucci, Senior, Professional Writing

Faculty Mentors:
Victoria Boynton, English
David Franke, English

Sperry Center, Room 304

Moderator: Mark Dodds, Associate Professor, Sport Management

Social Media's Impact on the NFL

Presenter: *Liz Wacienga, Senior, Sport Management*
Faculty Mentor: *Mark Dodds, Sport Management*

Club Playbook

Presenter: *Hannah Wheaton, Senior, Sport Management*
Faculty Mentor: *Mark Dodds, Sport Management*

POSTER SESSION A

2:30-3 p.m.

Sperry Center, 1st Floor Hallway

A Comparison of Annual Ring Growth, Vessel Element Density, and Stomata Density of Black (*Betula* lenta) and Yellow (*B. alleghaniensis*) Birches

Presenter: *Kayla Jones, Senior, Biological Sciences*
Faculty Mentor: *Steven B. Broyles, Biological Sciences*

Lung Air Space Distribution Varies According to Mode of Mechanical Ventilation

Presenters: *Cynthia M. Ruiz, Senior, Biology*
Nicole Mirabella, Senior, Biology
Faculty Mentor: *Louis A. Gatto, Biological Sciences*

Biochemical Characterization of the Substrate Specificity of the Salicylate Hydroxylase, NahG

Presenter: *Meigan Yuen, Senior, Biochemistry*
Faculty Mentor: *Katherine Hicks, Chemistry*

Cosmetics with Botanical Extracts

Presenter: *Melissa Sullivan, Senior, Chemistry*
Faculty Mentor: *Gregory Phelan, Chemistry*

Unraveling a Maya Mystery: Analysis of Raw vs. Fired Clay Body Samples from Belize

Presenters: *Robin Tobin, Senior, Adolescent Education Mathematics*
Kelsey O'Donnell, Senior, Adolescent Education Mathematics
Faculty Mentors: *Robert Darling, Geology*
Jeremiah Donovan, Art and Art History
Gregory Phelan, Chemistry

Temporal Analysis of Flow and Water Chemistry in West and East Branches of the Tioughnioga River, New York

Presenters: *Eric Fisher, Senior, Geophysics*
Jared Hall, Senior, Geology
Kristina Gutchess, Graduate, Geology
Faculty Mentor: *Li Jin, Geology*

Foam Rolling and Stretching's Effect on Acute Range of Motion

Presenters: *Josh Hammond, Senior, Kinesiology*
Jeff Reynolds, Senior, Kinesiology
Sam Lebowitz, Senior, Kinesiology
Faculty Mentor: *James Hokanson, Kinesiology*

Modeling and Technological Pedagogical Content Knowledge: Perceptions of Physical Education Teacher Candidates

Presenter: *Abigail Stewart, Junior, Physical Education*
Faculty Mentor: *Helena Baert, Physical Education*

Las aventuras de los gringos en Cuernavaca

Presenters: *Alyson Prunier, Senior, Biology/Spanish*
Casey Knutson, Senior, International Studies
Megan Ferguson, Senior, Geology/Economics
Joshua Head, Senior, TESOL
Joseph Marturano IV, Junior, New Media Design
Stephanie Offutt, Freshman, Archaeology/International Studies
Amanda Sibbitts, Sophomore, Biomedical Sciences
Faculty Mentor: *Norma Helsper, Modern Languages*

***Solubility Analysis of Hexanoic Acid, to Help Make Green Hydrocarbon Production Economically Feasible**

Presenter: *Joseph Hetzler, Senior, Chemistry*
Faculty Mentor: *Jeffrey Werner, Chemistry*

***Developing and Optimizing In-sample Protein Digestion and Peptide Extraction for MS/MS Profiling of Enzymes in Soil and Sediment**

Presenter: *Katherine Woodward, Junior, Chemistry*
Faculty Mentor: *Jeffrey Werner, Chemistry*

***Bioinformatic Protein Analysis Based Upon Constituent Tryptic Peptide Makeup**

Presenter: *Adam P. Graham, Junior, Chemistry*
Faculty Mentor: *Jeffrey Werner, Chemistry*

***The Effects of both Planar and Coplanar PCBs on Voluntary Ethanol Intake in Female Rats**

Presenter: *Renee Bullard, Senior, Biomedical Sciences*
Faculty Mentors: *David Berger, Professor Emeritus, Psychology*
John Lombardo, Psychology

***Sensory Integration/Motor Sensory (SIMS) Movement Exploration Center Single-Subject Research Design**

Presenter: *Kelsey Bordwell, Senior, Physical Education*
Faculty Mentor: *Timothy Davis, Physical Education*

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

CONCURRENT SESSIONS II

3-4 p.m.

Sperry Center, Room 104

Moderator: Mary Lynch Kennedy, Distinguished Teaching Professor, English

SUNY Cortland 2013 Writing Contest Award Winners Present!

The Epistolary Journal in the Postcolonial Light: How Mariama Ba and Ernest Gaines Obscure the Limits of Genre and the Public and Private Spheres of Experience

Presenter: *Rachelann Lopp Copland, Graduate, English*
Faculty Mentor: *Mary Lynch Kennedy, English*

Summer's Gone

Presenter: *Jonathan Herr, Senior, History*
Faculty Mentor: *Mary Lynch Kennedy, English*

Protesting with Palestine: The International Solidarity Movement, 2001-2011

Presenter: *Melissa L. Howard, Senior, History*
Faculty Mentor: *Mary Lynch Kennedy, English*

A Memoir of New Orleans, To Michael

Presenter: *Jenna Ingiosi, Graduate, English*
Faculty Mentor: *Mary Lynch Kennedy, English*

Man to Man

Presenter: *Jacob Richter, Junior, English/Professional Writing*
Faculty Mentor: *Mary Lynch Kennedy, English*

Stoop

Presenter: *Brittney Thomas, Senior, Anthropology*
Faculty Mentor: *Mary Lunch Kennedy, English*

Rude Awakening to College

Presenter: *Nichole Toussaint, Sophomore, Pre-Major*
Faculty Mentor: *Mary Lynch Kennedy, English*

Sperry Center, Room 105

Moderator: Erik Lind, Assistant Professor, Kinesiology

Effect of Stress and Aggression on the Injury Rate within Collegiate Lacrosse Players

Presenter: *Paul M. Monnat, Senior, Exercise Science*
Faculty Mentor: *Erik Lind, Kinesiology*

The Effect of Music on Physical, Motivational, and Perceptual Measures during Cycling Exercise

Presenters: *Daniel R. Hanson, Senior, Exercise Science*
Rachel L. Wittig, Senior, Exercise Science
Gary Kern, Senior, Exercise Science
Faculty Mentors: *Erik Lind, Kinesiology*
James Hokanson, Kinesiology

An Investigation of Yoga, Cognitive and Somatic Anxiety, and Cognitive Functioning

Presenters: *Brianna Fallis, Senior, Kinesiology*
Brittany Beckmann, Senior, Kinesiology
Faculty Mentors: *Erik Lind, Kinesiology*
Katherine Polasek, Kinesiology

Sperry Center, Room 106

Moderator: Scott Anderson, Associate Professor, Geography

Racemic and Enantioselective Synthesis of a Series of Trail Pheromones Produced by *Cactoblastis Cactorum* Larvae

Presenter: *Tyler Potter, Senior, Chemistry*
Faculty Mentor: *Frank Rossi, Chemistry*

Assessing the Impact of 2-2-dibromo-3-nitrilopropionamide, a Microbiocide Used in Hydraulic Fracturing Fluid, on Benthic Microbial Communities

Presenter: *John Chodkowski, Senior, Biochemistry*
Faculty Mentor: *Jeffrey Werner, Chemistry*

Providing Technology Support to the Community Baboon Sanctuary in Belize

Presenters: *Nicholas SanPhillipo, Junior, Geographic Information Systems—Advanced Geospatial Applications*
Robert Brown, Junior, Geographic Information Systems—Advanced Geospatial Applications
Faculty Mentor: *Scott Anderson, Geography*

Belize Summer Teacher's Institute: Examining Environmental and Cross-Cultural Education in Central America

Presenter: *Taylor-Marie Solano, Graduate, MST Childhood Education*
Faculty Mentor: *Susan Stratton, Childhood/Early Childhood Education*

Sperry Center, Room 204

Moderator: Gigi Peterson, Associate Professor, History

The Debate over Divorce in the Merovingian and Carolingian Kingdoms: the Laity versus the Church

Presenter: *Hannah Greene, Junior, History*
Faculty Mentor: *Laura Gathagan, History*

American Mother vs. Communist Martyr: The Image of Ethel Rosenberg

Presenter: *Charlotte Freed, Senior, History*
Faculty Mentor: *Randi Storch, History*

NAFTA: The Economic Destruction of Mexico and the Growth of United States Immigration

Presenter: *Joseph Barbella, Junior, History*
Faculty Mentor: *Ute Ritz-Deutch, History*

Sperry Center, Room 205

Moderator: Christopher McRoberts, Professor, Geology;
Director, Undergraduate Research Council

***How Archeological Discoveries are Influencing and Guiding the Revitalization of Ancient Maya Ceramic Practices in Western Belize**

Presenters: *Giotto Zampogna, Junior, Art and Art History*
Alexandra Abbott, Sophomore, Archeology
Faculty Mentor: *Jeremiah Donovan, Art and Art History*

***Voter Suppression: American Democracy at Risk?**

Presenter: *Michael Myones, Senior, Political Science*
Faculty Mentor: *Henry Steck, Political Science*

***Measurements of Atmospheric Carbon Dioxide in Cortland County Air**

Presenter: *Gregory Simone, Junior, Chemistry*
Faculty Mentor: *Peter Jeffers, Professor Emeritus, Chemistry*

Deciphering the Language of Magic: The Interaction of Linguistic Signification and the Signification produced through Harry Potter Spell Casting

Presenter: *Matthew D. Sullivan, Senior, Communication/French Language and Literature/English Creative Writing, SUNY Potsdam*
Faculty Mentor: *Liberty Stanavage, English, SUNY Potsdam*

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

POSTER SESSION B

4-4:30 p.m.

Sperry Center, 1st Floor Hallway

Investigating the Interaction of GME with VTC3; Two Proteins Involved in One of the Ten Steps in the Biosynthesis of Ascorbic Acid in *Arabidopsis thaliana*

Presenter: *John Chodkowski, Senior, Biochemistry*
Faculty Mentor: *Patricia Conklin, Biological Sciences*

Secondary CO2 Inclusions in Gore Mountain Garnet, North Creek, NY

Presenter: *Megan M. Ferguson, Senior, Geology/Economics*
Faculty Mentor: *Robert S. Darling, Geology*

Origination and Evolutionary Dynamics of the End-Permian Post-Extinction Recovery Inferred from Longevities of Triassic Bivalve Species

Presenter: *Joseph Cataldo, Sophomore, Geology*
Faculty Mentor: *Christopher McRoberts, Geology*

SUNY Cortland 911 Emergency Call Research

Presenter: *Aleena Kanner, Senior, Kinesiology*
Faculty Mentors: *Marley Barduhn, Assistant Provost for Teacher Education; SUNY Cortland EMS Advisor*
Philip Buckenmeyer, Kinesiology

CONCURRENT SESSIONS III

4:30-5:30 p.m.

Sperry Center, Room 104

Moderator: Gigi Peterson, Associate Professor, History

Beauties of the Sawdust Scented Ring: Circus Women Seen Through the Eyes of Mainstream Media: 1890-1920

Presenter: *Sarah Talbot, Senior, History*
Faculty Mentor: *Randi Storch, History*

Frances Perkins: The "Fussy" Madame Secretary

Presenter: *Stephanie Hopkins, Senior, History*
Faculty Mentor: *Gigi Peterson, History*

Protesting with Palestine: The International Solidarity Movement, 2001-2011

Presenter: *Melissa Howard, Senior, History*
Faculty Mentor: *Gigi Peterson, History*

Sperry Center, Room 105

Moderator: Deborah Van Langen, Assistant Professor, Kinesiology

Caffeine Ingestion and Perceived Exertion During Submaximal Effort Lactate Threshold Exercise

Presenter: *Casey Austin, Senior, Exercise Science*
Faculty Mentor: *Deborah Van Langen, Kinesiology*

Nutrition Knowledge of College Student Athletes

Presenter: *Rebecca Sullinger, Senior, Exercise Science*
Faculty Mentor: *Deborah Van Langen, Kinesiology*

Effects of Exogenous and Endogenous Pre-Cooling on a 20-km Cycling Time Trial in the Heat

Presenter: *Nathan Barbour, Senior, Exercise Science*
Faculty Mentor: *Deborah Van Langen, Kinesiology*

Sperry Center, Room 106

Moderator: Cynthia Benton, Professor, Childhood/Early Childhood Education

Integrate Technology Creatively into Curriculum to Enhance Children's Learning

Presenters: *Nick Penberthy, Junior, Childhood Education*
Anthony Schiotis, Senior, Childhood Education
Faculty Mentor: *Shufang Shi, Childhood/Early Childhood Education*

Costa Rica: Reflections on International Education Volunteer Experience

Presenters: *Rachel Kolod, Senior, Childhood/Early Childhood Education*
Kristen Bobrik, Graduate, Literacy
Christina Lopilato, Junior, Childhood Education/Math
Caitlyn-Marie Clarke, Junior, Childhood Education
Amanda Candelaria, Junior, Early Childhood Education
Faculty Mentor: *Valerie Behr, Childhood/Early Childhood Education*

Sperry Center, Room 204

Moderator: Christopher McRoberts, Professor, Geology; Director, Undergraduate Research Council

***Encapsulation Technology for Increased Biosensor Stability**

Presenter: *Imani Sinclair, Senior, Biomedical Sciences*
Faculty Mentor: *Theresa Curtis, Biological Sciences*

***A Critical Discourse Analysis of "No Promo Homo" Policies in the United States**

Presenter: *Arron Bound, Senior, Inclusive Special Education*
Faculty Mentor: *Brian Barrett, Foundations & Social Advocacy*

***Do Altitude Training Masks have an Effect on Lung Function and Cardiovascular Performance?**

Presenter: *Zachary Taillie, Senior, Exercise Science*
Faculty Mentor: *James Hokanson, Kinesiology*

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

Abstracts

KEYNOTE ADDRESS

12:30-1:20 p.m.

"Multidisciplinary Solutions to 21st Century Environmental Challenges: Lessons from Sustainable Agriculture and Conservation Grazing"

***Gary S. Kleppel '73**, Ph.D.*

Serious environmental challenges, many of them arising from human domination of the Earth's ecosystems and the misuse of natural capital, threaten our way of life and even our life support systems. These great challenges will not be resolved by practitioners within a single discipline. Rather, solutions will come from collaborations across a vast array of disciplines. Unfortunately, interdisciplinary collaboration has not been the standard in research, particularly at our nation's universities. The emerging science of sustainability introduces a new paradigm for research and education that is grounded in collaboration. Experiences in sustainable agriculture and conservation grazing provide examples of the interdisciplinary approach.

A revolutionary change is occurring in the way food is produced and marketed in the United States. Underpinning this revolution is the convergence of three elements that define sustainability in agriculture: environmental stewardship, economic viability, and ethical behavior. Farms need to be profitable, and many that are protect their natural capital – the land and its resources. This is accomplished within an ethical framework that supports equity within the farm's social environment, integrity in the market place, and the humane treatment of livestock in the agricultural landscape.

The New York State Conservation Grazing (NYSCoG) Program extends these principles to fundamental ecological science, environmental management, and public-private sector collaboration. Our research on the ecology of human-dominated landscapes has led to the development of protocols for the sustainable use of livestock for vegetation management in a variety of landscapes and, in particular, landscapes compromised by biological invasions. Our grazing protocols reduce the need for human labor, fossil fuels and toxic chemicals. They tend to restore biodiversity in the vascular plant community and to stimulate healthy microbial activity and diversity in the soil. To implement the program, NYSCoG will permit beginning farmers to graze livestock on state land without charge, as long as they follow the prescribed protocols. Thus, the NYSCoG Program will give neophyte farmers a boost toward profitability while they steward the state's lands at a considerable savings to taxpayers. NYSCoG provides an example of how "environmental multitasking" that can create positive outcomes for biodiversity conservation, economic vitality in the private sector, and food and fiber for an increasingly hungry planet.

CONCURRENT SESSIONS I

1:30-2:30 p.m.

What the EU Is & What SUNYMEU Is!

Michael Myones, Senior, Political Science
Henry Steck, Political Science

The European Union is an intergovernmental organizations formed by numerous treaties and agreements among the organization's member states since the end of World War II. Today, the EU consists of 28 member states and is one of the world's most influential democratic and economic institutions. To better understand this unique association, members of the SUNY faculty established the first model European Union simulation, which continues to be a successful educational program. Each country is represented by a delegation of students who assume the roles of political figures of the European Council. Though similar to Model UN, this simulation allows for a much more hands-on learning experience for students. SUNY Cortland students recently participated in a 21 institution simulation in Brussels. My presentation will describe this and also discuss the proposal I authored for the simulation regarding the refugee issue.

One Hundred Years after Sarajevo: Serbia, Europe and the Vexed Issue of EU Enlargement

Daniel Bretscher, Senior, Political Science
Henry Steck, Political Science

Ever since the European Union was first created it began expanding into new countries. What started at first as a union between six nations is today a union of 28 nations. Most recently it was a nation in the Balkans, Croatia, who was admitted into the European Union. Serbia is now a nation at the border of the European Union who would have more to gain from joining than not joining. Serbia must meet certain criteria in order to become part of the European Union.

The EU and Economic Policy on a Global Scale: The Challenge of China

Justin St. Louis, Senior, Political Science
Henry Steck, Political Science

After the fall of the Soviet Union the United States' influence in economic and political matters stretched a crossed the globe. With the creation of the European Union, a new unique trading partner was established. Considering the current economic climate and new rapidly emerging markets and their influence in developing nations, the European Union must expand their influence in developing nations. Most specifically, in the Sub-Saharan region where the mining of newly found natural resources is on the rise and could dramatically alter trade balances. In order to mitigate the treat of a much more devastating third world war the European Union and the west as a whole must use its abundance of resources to not only balance the geopolitical scale away from a threatening China as well as keep the world peaceful and orderly in order to ensure economic progress.

Still Rejected – Still on the Margins: Can the EU Solve the "Problem" of the Roma?
Stephen Best, Sophomore, Political Science
Henry Steck, Political Science

Integrating the Roma population into modern European society is a daunting, and seemingly impossible effort. On one side of the issue, the Roma remain faithful to their heritage, choosing to live a life independent from the rest of society. On the other side of the issue, the rift between society and the Roma only continues to grow, as outrage over the present Roma population continues to increase. Many European citizens characterize the Roma as a group that chooses not to recognize boarders, all the while considering them a group that frequently violates established civil laws while milking the social security systems established in these areas. Bearing these situational facts in mind, will integration ever be possible? Will European governments ever be able to establish pathways for the Roma to integrate successfully, or will the Roma situation plague the European continent for year to come?

Writers Read: Professional Writers Present Their Work
Katie Austin, Senior, Professional Writing
Anna Coppola, Senior, Professional Writing
Jonathan Diaz, Senior, English
Mark Hahn, Senior, Professional Writing
Rebecca Laughlin, Senior, Professional Writing
Samuel Marcucci, Junior, Professional Writing
Madison Messina, Senior, Professional Writing
Lonnie Morris, Senior, Professional Writing
Aaron Proia, Senior, Professional Writing
Allison Talucci, Senior, Professional Writing
Victoria Boynton, English
David Franke, English

Seniors in the Professional Writing Program will present short pieces from their portfolios. These performances constitute the culmination of four years of student writers working with words.

Social Media's Impact on the NFL
Liz Wacienga, Senior, Sport Management
Mark Dodds, Sport Management

A look into the use of social media by various teams in the NFL, how they use it in their marketing plans, and an examination of how teams communicate event information, player news, and sales promotions to fans across the world while assessing how human interest stories, advertisements and sponsorships have an effect on a team's social media presence.

Club Playbook

Hannah Wheaton, Senior, Sport Management
Mark Dodds, Sport Management

This paper will study the relationship between peers and leadership. It will examine the skills and qualities [both positive and negative], which come with leading fellow peers. By using the Sport Management Club and sport event manager positions as a laboratory, the author will apply key leadership theory to develop key findings. The conclusions of this study will help to better prepare future e-board members, and improve student outcomes via this student club experience.

POSTER SESSION A

2:30-3 p.m.

A Comparison of Annual Ring Growth, Vessel Element Density, and Stomata Density of Black (*Betula* lenta) and Yellow (*B. alleghaniensis*) Birches

Kayla Jones, Senior, Biological Sciences
Steven B. Broyles, Biological Sciences

Polyploid plant species frequently exhibit increases in cell size and growth rates as compared to their diploid related species. Black (*Betula* lenta) and yellow (*Betula* alleghaniensis) birches are common deciduous trees in the eastern United States. Despite being each other's closest relatives, yellow birch is a hexaploid species (2n= 84) and black birch is diploid (2n = 28). We tested whether differences in annual wood ring growth rate, vessel element size and density, leaf stomata density, and guard cell size differs between the hexaploid and polyploidy species. Our analyses indicate that yellow and black birches from Hoxie Gorge in Cortland County, NY have similar annual ring growth rates and stomata densities, but yellow birch has statistically significant lower vessel elements density and greater guard cell size relative to black birch. These results are not in complete agreement with the hypothesis that the polyploidy species will have large cell sizes and growth rates in comparison with their related diploid species.

Lung Air Space Distribution Varies According to Mode of Mechanical Ventilation

Cynthia M. Ruiz, Senior, Biology
Nicole Mirabella, Senior, Biology
Louis A. Gatto, Biological Sciences

Air enters the lung through branching conducting airways that become slender and end as microscopic sacs (alveoli) where gas exchange takes place. Ventilation supplies air to the alveolus (breath). Premature babies, drowning and smoke inhalation victims, and critically ill patients are candidates for mechanical ventilation. Mechanical ventilation protocols vary in volume and timing of the applied breath. These critical settings, unless optimal, can cause ventilator-induced lung injury. Our aim was to study lung strain in animal models subjected to various types of mechanical ventilation. Rats were ventilated with a conventional protocol or with an alternative mode known as airway pressure release ventilation (APRV). The animal studies were conducted at Upstate Medical University and the lungs were assessed histologically at SUNY Cortland. Our main finding was a differential air distribution between conducting and alveolar volumes. There was more alveolar air with APRV, thus unveiling novel internal lung dynamics of clinical significance.

Biochemical Characterization of the Substrate Specificity of the Salicylate Hydroxylase, NahG

Meigan Yuen, Senior, Biochemistry
Katherine Hicks, Chemistry

I studied the substrate specificity of the enzyme NahG from *Pseudomonas putida*. NahG is a salicylate hydroxylase that catalyzes the decarboxylative hydroxylation of salicylate to catechol. Specifically, my work was to examine the substrate specificity of NahG using steady-state kinetics and binding affinity assays. My data indicated that NahG catalyzes the transformation of the native salicylate substrate with a k_{cat} of 1.8 ffl 0.2 s^{-1} and a K_M of 1.6 ffl 0.5 ⎕M. The binding constant was 131 ffl 33 ⎕M. These results were used as a basis to examine the ability of the enzyme to catalyze the turnover of substrates with diverse substituents at the 3'-position of the benzoate ring or additional aromaticity on the salicylate substrate. My work indicates that the native substrate specificity of NahG is relatively broad. This research could eventually aid in bioremediation efforts aimed to remove aromatic pollutants, often the byproducts of petroleum processing, from contaminated soil.

Cosmetics with Botanical Extracts

Melissa Sullivan, Senior, Chemistry
Gregory Phelan, Chemistry

Throughout the past two semesters, research correlating skin permeation with sonication, botanical extracts, and cosmetic science was conducted. Empirical evidence supports the claim that botanical based formulations improve the effectiveness of cosmetic products and enhance skin permeation. This was based on the analysis of numerous recent studies from scientific journals. Cosmeceuticals and skin permeation were probed in Spring 2013. Improved permeation occurs when aided with sonication or other techniques requiring external devices or energy. Skin infusion methods that do not require an outside source are needed for practical everyday use. In Fall 2013, cosmeceuticals with the influence of botanical extracts were researched. Literature proves botanical extracts permeate into the skin, protect against sun, and reduce signs of aging. Creams composed of botanical extracts will be created and analyzed during Spring 2014. Proof of botanical extracts improving cosmetic products will be explored.

Unraveling a Maya Mystery: Analysis of Raw vs. Fired Clay Body Samples from Belize

Robin Tobin, Senior, Adolescent Education Mathematics
Kelsey O'Donnell, Senior, Adolescent Education Mathematics
Robert Darling, Geology
Jeremiah Donovan, Art and Art History
Gregory Phelan, Chemistry

Methods of Maya pottery production have been lost over the last 2-3 generations of Belize women. What starting materials were used to produce the pottery? What was their source? In order to investigate this, the Art and Art History Department supplied samples of raw and fired clay bodies generated from clay from Mountain Pine Ridge, Belize and near the Belize/Guatemala border and currently used by the San Antonio Women's Group in Belize to produce polychrome pots. An X-ray diffractometer is used to analyze the samples to determine the ceramic material, similarities and variations between raw and fired materials, and to hypothesize on a likely source. This investigation sets the stage to compare results with similar source analysis of sample sherds of ancient Maya polychrome pots, both domestic and from those used as offerings.

Temporal Analysis of Flow and Water Chemistry in West and East Branches of the Tioughnioga River, New York

Eric Fisher, Senior, Geophysics
Jared Hall, Senior, Geology
Kristina Gutchess, Graduate, Geology
Li Jin, Geology

Understanding trends in river flow and water chemistry of a headwater is crucial in determining the natural effects and human impact on the river system downstream. The Tioughnioga River is a headwater of the Susquehanna River, which flows into the Chesapeake Bay where excess nitrogen drives eutrophication and algal growth. In this study, we evaluated weekly flow and water chemistry change at two locations (West Branch and East Branch) in the Tioughnioga River from August to November, 2013. Results show that the East Branch contributes more than half of the water to the Tioughnioga River, however dissolved ion levels such as Na^+, Cl^- and NO_3^- are usually higher in the West Branch due to its more urban proximity and land uses upstream. The richness of Ca^{2+}, Mg^{2+} and HCO_3^- in the water at both branches reflects the local geology and carbonate rock weathering.

Foam Rolling and Stretching's Effect on Acute Range of Motion

Josh Hammond, Senior, Kinesiology
Jeff Reynolds, Senior, Kinesiology
Sam Lebowitz, Senior, Kinesiology
James Hokanson, Kinesiology

Foam rolling has become increasingly popular as part of an exercise warm-up. Traditionally, dynamic and static stretching has been used during warm-up to increase joint range of motion. The purpose of the present study was to determine the effectiveness of foam rolling and static stretching on acute range of motion. Twenty-four healthy volunteers (17 male, 7 female, SUNY Cortland undergraduate students, ages 18-24) read and signed an approved informed consent. Range of motion (degrees) was measured using a goniometer, pre-warm up run, post-run, and post stretch or foam rolling condition. Warm-up consisted of a six-minute treadmill run at 70% of participants' maximum heart rate. Stretching and foam rolling were performed on separate occasions. Both static stretching and foam rolling showed statistically significant ($p < 0.05$) increases in range of motion, 7.3 degrees and 9.3 degrees, respectively.

Modeling and Technological Pedagogical Content Knowledge: Perceptions of Physical Education Teacher Candidates

Abigail Stewart, Junior, Physical Education
Helena Baert, Physical Education

The national standards for physical education teacher education state that teacher candidates should be able to plan and implement technology-infused lessons that meet lesson objectives and enhance learning in physical education. Research has shown that role modeling of technology integration can have a positive impact on the attitudes teacher candidates have in relation to integrating technology that as a result will enhance learning. The purpose of the study was to examine the perceptions of physical education teacher candidates on the role modeling of technology integration by their current and past university professors. This study used the Technological, Pedagogical, Content Knowledge (TPACK) framework as the theoretical foundation and examined the effect of role modeling on the 7 different constructs that make up the TPACK framework. Using a linear regression model, the results showed that role modeling of technology by professors has a significant correlation at $p<.01$ towards 5 of the constructs (TK, PK, TCK, TPK, and TPACK) while not significant towards CK and PCK. This suggests that role modeling makes a positive impact on the teacher candidates' self- rating of their self-efficacy in technology integration.

Las aventuras de los gringos en Cuernavaca

Alyson Prunier, Senior, Biology/Spanish
Casey Knutson, Senior, International Studies
Megan Ferguson, Senior, Geology/Economics
Joshua Head, Senior, TESOL
Joseph Marturano IV, Junior, New Media Design
Stephanie Offutt, Freshman, Archaeology/International Studies
Amanda Sibbitts, Sophomore, Biomedical Sciences
Norma Helsper, Modern Languages

Over this past winter session, we participated in SUNY Cortland's Study Abroad program in Cuernavaca, Mexico. We attended the Spanish Language Institute, where we enhanced our Spanish-speaking abilities, while familiarizing ourselves with Mexican history and culture. We were able to put our speaking and conversational skills to practice in the streets and with those that we met along the way. We participated in excursions to other places in Mexico, each place proving to have unique characteristics and sense of individual culture. However, it was with our host families that we had the opportunity to capture the true essence of Mexican food and the important role that family plays in Mexico. We are grateful for this opportunity that we were given to study and live in Cuernavaca, Mexico, and we feel that by sharing our experiences and knowledge with other students, we will inspire others to study abroad as well.

***Solubility Analysis of Hexanoic Acid, to Help Make Green Hydrocarbon Production Economically Feasible**

Joseph Hetzler, Senior, Chemistry
Jeffrey Werner, Chemistry

In collaboration with the Angenent Lab at Cornell, we have a bioreactor technology that produces hexanoic acid from organic wastes. Hexanoic acid is a bio-diesel precursor, making it a valuable product. The process however currently produces aqueous hexanoic acid. For the hexanoic acid to be useful it must first be separated from the water in the extraction broth. To separate the hexanoic acid from water it must be protonated (acidified), after which it separates into a distinct organic liquid layer. The research I conducted this summer was a study of the solubility of hexanoic acid under many different conditions (varying temperature, pH, and salts), with analysis using a gas chromatograph – mass spectrometer (GC-MS). The goal was to find a way to maximize process yields of hexanoic acid product while minimizing the cost of the extraction and purification process.

***Developing and Optimizing in-sample Protein Digestion and Peptide Extraction for MS/MS Profiling of Enzymes in Soil and Sediment**

Katherine Woodward, Junior, Chemistry
Jeffrey Werner, Chemistry

My summer research involved finding an ideal method for extracting peptides from soil samples. To do this, I used trypsin digestions and extraction methods such as strong cation exchange and solid phase extraction. I also determined the ideal solvents, digestion times, and temperature in which these techniques can be performed at high efficiency. For separating and analyzing the resultant peptides, I used High Performance Liquid Chromatography (HPLC). Using the methods I developed, I will be looking at microbial community proteins on the new LC-MS/MS instrument we're getting this spring through a grant from the National Science Foundation.

***Bioinformatic Protein Analysis Based Upon Constituent Tryptic Peptide Makeup**

Adam P. Graham, Junior, Chemistry
Jeffrey Werner, Chemistry

Complex microbial communities contain thousands of species. Each of these species contains hundreds of proteins having a variety of functions which determine what the microbe is capable of (i.e. DNA replication, enzymatic digestion, etc.) In order to understand how a microbial ecosystem is structured, it is necessary to break the proteins down into smaller pieces known as "tryptic peptides", which can be identified using mass spectrometry. This project aims to answer the question of whether or not it is possible to reliably identify proteins in a given sample from their constituent tryptic peptides following an in silico trypsin digest. Our work on this project involved sorting, analyzing, and making sense of the volumes of data contained within the National Center for Biotechnology Information (NCBI) protein database. PERL scripting was employed to map taxonomic specificity as well as identified function to tryptic peptide sequences corresponding to known proteins.

***The Effects of both Planar and Coplanar PCBs on Voluntary Ethanol Intake in Female Rats**

Renee Bullard, Senior, Biomedical Sciences
David Berger, Professor Emeritus, Psychology
John Lombardo, Psychology

Polychlorinated biphenyls (PCBs) are toxic environmental contaminants often found in food, soil, and water. We tested the hypothesis that consuming a coplanar PCB would cause an increase in voluntary ethanol intake by adolescent female rats, while consuming a planar PCB would decrease intake, compared to controls. Rats were dosed once daily for 30 days with either cookies containing planar PCBs, coplanar PCBs, or control cookies. Subsequently, rats were addicted to ethanol using a fade-in procedure, and then were ethanol deprived for 23 hours. Ethanol bottle weights were taken during the 1-hr access period to determine the level of craving. Statistical analyses showed that only the difference across days was significant, while the group differences were not. Thus, the rats' ethanol intake varied over the measurement period, but the amount of ethanol consumed by each PCB congener group and the control group did not differ, and there were no groups x days interaction.

***Sensory Integration/Motor Sensory (SIMS) Movement Exploration Center Single-Subject Research Design**

Kelsey Bordwell, Senior, Physical Education
Timothy Davis, Physical Education

The purpose of this study was to conduct a single subject (repeated measures) research study in the SIMS center and general PE environment with a child diagnosed with SPD. The SIMS (Sensory Integration Motor Sensory) Center is new to the Park Center and was developed by Dr. Tim Davis. The purpose of the SIMS Center is to provide PE majors with a better understanding of the importance of sensory integration activities and to address the growing number of children diagnosed with Sensory Processing Disorders (SPD). Single-subject research emerged as a necessary product of Applied Behavior Analysis (ABA), a discipline aimed at understanding and improving maladaptive human behavior (e.g. non-compliance). Unlike other methodologies reviewed with similar intent, ABA accomplishes this by targeting only observable behaviors of social significance (Cooper, Heron, & Heward, 1987). Specific measures included on and off task behavior during across six 20 minute physical education lessons.

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

CONCURRENT SESSIONS II

3-4 p.m.

The Epistolary Journal in the Postcolonial Light: How Mariama Ba and Ernest Gaines Obscure the Limits of Genre and the Public and Private Spheres of Experience
Rachelann Lopp Copland, Graduate, English
Mary Lynch Kennedy, English

The essay was awarded the prize for Academic Writing.

Summer's Gone
Jonathan Herr, Senior, History
Mary Lynch Kennedy, English

The short story was awarded the prize for Fiction.

Protesting with Palestine: The International Solidarity Movement, 2001-2011
Melissa L. Howard, Senior, History
Mary Lynch Kennedy, English

The essay was awarded the prize for Academic Writing.

A Memoir of New Orleans, To Michael
Jenna Ingiosi, Graduate, English
Mary Lynch Kennedy, English

The memoir was awarded the prize for Creative Nonfiction.

Man to Man
Jacob Richter, Junior, English/Professional Writing
Mary Lynch Kennedy, English

The short story was awarded the prize for Non-course Writing.

Stoop
Brittney Thomas, Senior, Anthropology
Mary Lunch Kennedy, English

The poem was awarded the prize for Poetry.

Rude Awakening to College
Nichole Toussaint, Sophomore, Pre-Major
Mary Lynch Kennedy, English

The essay was awarded the prize for Academic Writing in a Composition Course.

Effect of Stress and Aggression on the Injury Rate within Collegiate Lacrosse Players

Paul M. Monnat, Senior, Exercise Science
Erik Lind, Kinesiology

Many different factors and antecedents have been blamed for sport injuries, but rarely are stress and aggression talked about as precursors to injury, particularly in contact sports. The purpose of this study is to determine the relationship of stress and aggression on injury rate and severity in collegiate lacrosse. Prior to the start and at the midpoint of the season, members of both the SUNY-Cortland's men's and women's lacrosse teams will be administered questionnaires to measure stress (Perceived Stress Scale; Social Readjustment Rating Scale) and aggression (Buss-Perry Hostility Inventory). The rate and severity of injuries will be documented by a certified athletic trainer. Descriptive data will be presented as Mean±standard deviation and analyzed using SPSS software. Results are forthcoming.

The Effect of Music on Physical, Motivational, and Perceptual Measures during Cycling Exercise

Daniel R. Hanson, Senior, Exercise Science
Rachel L. Wittig, Senior, Exercise Science
Gary Kern, Senior, Exercise Science
Erik Lind, Kinesiology
James Hokanson, Kinesiology

The purpose of the study is to determine whether music affects physical performance, motivation and perceived exhaustion while cycling. Thirty SUNY-Cortland college-aged students (15 male, 15 female) will be used in the study. The participants will perform two counterbalanced 12-kilometer time trials in the study under conditions of (a) music and (b) no music. Rate of perceived exertion and level of motivation will be assessed at selected time points during and at the end of each trial as will the time taken to complete each trial. Descriptive data will be presented as mean±standard deviation and analyzed using SPSS software. Results are forthcoming.

An Investigation of Yoga, Cognitive and Somatic Anxiety, and Cognitive Functioning

Brianna Fallis, Senior, Kinesiology
Brittany Beckmann, Senior, Kinesiology
Erik Lind, Kinesiology
Katherine Polasek, Kinesiology

The purpose of this study is to examine the relationship between yoga, cognitive and somatic anxiety, and various measures of cognitive function. The participants will include approximately 20 undergraduate college students at SUNY-Cortland who will participate in four pretreatment and post-treatment sessions once per week for four weeks. During these sessions, participants will complete (a) a modified Competitive State Anxiety Inventory-2 (CSAI-2) to assess self-reported levels of cognitive anxiety and somatic anxiety, (b) cognitive tests provided online by Lumosity to measure participants' memory, speed, and attention, (c) complete sixty minutes of yoga taught by a certified yoga instructor, and (d) retake the CSAI-2 and cognitive tests to measure anxiety levels and cognitive function following the yoga treatment. Descriptive data will be reported as mean±standard deviation, and SPSS version 21.0 will be utilized to statistically analyze the data. Results are forthcoming.

Racemic and Enantioselective Synthesis of a Series of Trail Pheromones Produced by *Cactoblastis Cactorum* Larvae

Tyler Potter, Senior, Chemistry
Frank Rossi, Chemistry

Previous research at SUNY Cortland by Dr. Rossi and his students elucidated the structures of a series of compounds isolated from *Cactoblastis cactorum* larvae. Biological assays by Dr. Fitzgerald and his students indicated several of the isolated compounds elicited trail-following behavior in the larvae, an exciting prospect because this is only the second insect larvae trail pheromone to be structurally characterized. This research involves the synthesis of the putative trail pheromones to confirm their structure and provide material for biological assays. An enantioselective synthesis was implemented and produced two of the biologically active compounds. An alternative racemic synthesis was also developed and used to provide the biologically active racemic compounds, 5 in total.

Assessing the Impact of 2-2-dibromo-3-nitrilopropionamide, a Microbiocide Used in Hydraulic Fracturing Fluid, on Benthic Microbial Communities

John Chodkowski, Senior, Biochemistry
Jeffrey Werner, Chemistry

Microbial communities have a crucial role in the carbon cycle, breaking down organic matter that settles to the bottom of a water body. These communities, composed of Bacteria and Archaea, play a vital ecological role in nutrient recycling, but even more intriguing is how different species have evolved a specific role within the community itself. A microcosm experiment was set up with benthic anaerobic sediment samples obtained from the Cayuga Lake Inlet in Ithaca, NY to investigate the effect of 2,2-dibromo-3-nitrilopropionamide (DBNPA), a microbiocide used in hydraulic fracturing. Ten microcosms were tested which were composed of four controls and the remaining six dosed with three possible concentrations of DBNPA: 0.1mM, 1.0 mM, and 3.0 mM. Gas chromatography, ion chromatography, and molecular techniques were used to analyze the productivity of the communities and track the degradation of DBNPA. Furthermore, metagenomic sequences were obtained from purified DNA samples to provide insight into how particular species were affected by DBNPA.

Providing Technology Support to the Community Baboon Sanctuary in Belize

Nicholas SanPhillipo, Junior, Geographic Information Systems—Advanced Geospatial Applications
Robert Brown, Junior, Geographic Information Systems—Advanced Geospatial Applications
Scott Anderson, Geography

With support from President Bitterbaum and the Geography Department's George McDermott Fund, SanPhillipo and Brown travelled to Belize during the Winter Recess to work with the managers of the Community Baboon Sanctuary. The Sanctuary comprises a number of small villages along the Belize River where community members have established a protected area for local howler and spider monkeys. They requested help from the SUNY Cortland GIS program in tracking the daily movements of the monkeys using GPS and GIS technology so that they could better understand and protect the monkey population. The ultimate objective of this new collaboration between the GIS program at SUNY Cortland and the Sanctuary is to enhance the Sanctuary's ability to attract ecotourists. SanPhillipo and Brown will talk about their experiences along the Belize River, their efforts to support the Sanctuary's goals, and how the relationship between SUNY Cortland and the Sanctuary can be further developed.

Belize Summer Teacher's Institute: Examining Environmental and Cross-Cultural Education in Central America

Taylor-Marie Solano, Graduate, MST Childhood Education
Susan Stratton, Childhood/Early Childhood Education

In July 2013, 15 teachers, professors, and teacher candidates from the United States travelled to Belize to participate in SUNY Cortland's Summer Teachers Institute, exchanging educational resources and cultural lessons with Belizean teachers. During the weeklong workshop, both the Americans and the Belizeans lived at a "river camp" along Belize's Macal River and were able to take excursions that highlighted Belize's unique ecosystems and cultural history. All teachers benefitted from a special professional development involving the exchange of ideas between participants of diverse backgrounds. Both the American and Belizean teachers left with myriad lesson plans and convictions to incorporate environmental education into their curriculum in an essential quest to save our world's delicate ecosystems. Furthermore, all teachers took with them a sincere insight into different cultural ideologies and traditions, and with that, a greater sense of understanding. This presentation will be my account of the Summer Teacher's Institute.

The Debate over Divorce in the Merovingian and Carolingian Kingdoms: the Laity versus the Church

Hannah Greene, Junior, History
Laura Gathagan, History

Hannah Greene's paper, written for a HIS 290 "Historical Methods" course, explores the changing roles of gender and the Catholic Church in the practice of marriage and divorce during the Merovingian and Carolingian eras.

American Mother vs. Communist Martyr: The Image of Ethel Rosenberg

Charlotte Freed, Senior, History
Randi Storch, History

Charlotte Freed's paper, written for the HIS 490 "Senior Seminar," examines competing representations of Ethel Rosenberg, an important US figure in Cold War history, whose trial and execution remain controversial.

NAFTA: The Economic Destruction of Mexico and the Growth of United States Immigration

Joseph Barbella, Junior, History
Ute Ritz-Deutch, History

With the passage of the North American Free Trade Agreement (NAFTA) in 1994, the United States, Canada, and Mexico united through free trade. Although NAFTA has created the largest Gross Domestic Product of any trade agreement in the world, the United States' economy towers over its trading partners. NAFTA has increased the flow of goods and the flow of Mexican immigrants north of the border, as well as leading to the unemployment of millions of Mexicans, especially farmers. In the United States, the effects of NAFTA are hardly taken into account when the immigration issue is raised. The presentation will review the impact NAFTA has had on migrant movements from Mexico. NAFTA should not solely be measured by the wealth it has provided the United States. Its effects as an underlying cause of Mexican immigration and economic instability must also be examined within the immigration debate.

***How Archeological Discoveries are Influencing and Guiding the Revitalization of Ancient Maya Ceramic Practices in Western Belize**

Giotto Zampogna, Junior, Art and Art History
Alexandra Abbott, Sophomore, Archeology
Jeremiah Donovan, Art and Art History

The analytical study of ceramic processes and the archeological study of recovered pottery vessels are essential to an understanding and preservation of Maya cultural heritage. Belize is at a critical juncture in losing connections to its cultural past due to the appeal of modernization. This presentation will describe the efforts of three SUNY Cortland students, focusing on the revitalization of traditional Maya pottery practices, in a unique collaboration with the San Antonio Women's Group, in western Belize. The students will describe their research of traditional methods used in ancient times and the training they provided to the group of potters. Information from the student's archeological work in the Maya site of Cahal Pech revealed important links to the clays used in the creation of pottery vessels and established a link to the pottery traditions in San Antonio.

***Voter Suppression: American Democracy at Risk?**

Michael Myones, Senior, Political Science
Henry Steck, Political Science

In recent years, a deliberate effort to restrict access to the ballot has spread across the United States, most notably in battleground states of partisan politics. This movement to suppress the vote can be seen as a result of conservative influence, stemming from the 2008 presidential election and continuing through the 2010 midterm elections. Various states have chosen to institute policies which have the potential to disenfranchise voters, such as strict voter identification requirements, restriction of early voting, extreme partisan gerrymandering, and restrictions on voter registration. All of these methods of suppression have the ability to negatively affect historically Democratic leaning portions of the electorate, despite how neutral these voting changes may be on their face. Understanding these election procedures, and their effect on the voting populace, is essential in the study of democratic theory and political science because of the contentious history of voting rights in the United States.

***Measurements of Atmospheric Carbon Dioxide in Cortland County Air**

Gregory Simone, Junior, Chemistry
Peter Jeffers, Professor Emeritus, Chemistry

Air samples were taken from various locations in Cortland County and the concentration of carbon dioxide was determined. A precisely calibrated glass vacuum system was constructed and used to make the pressure and volume measurements required to calculate carbon dioxide content in ppm. Measurements were begun during the summer of 2013 and continue to the present. Results appear to be consistent with values reported by NOAA and will be discussed in terms of expectations for the locations, times, and dates of sample collection. Implications of the values found to global climate change will be mentioned.

Deciphering the Language of Magic: The Interaction of Linguistic Signification and the Signification produced through Harry Potter Spell Casting

Matthew D. Sullivan, Senior, Communication/French Language and Literature/English Creative Writing, SUNY Potsdam
Liberty Stanavage, English, SUNY Potsdam

The *Harry Potter* series has been translated from English into multiple languages. One aspect brought about from these translations is 'creative transposition,' meaning that though the words and phrases of a translation result in the same meanings, how those meanings are formed is not always the same. This issue of different 'paths' to create meaning is important because if a translation alters its form to create the same meaning, then perhaps there exists an additional meaning behind the original meaning. To obtain my results, I applied Jacque Derrida's literary method of *deconstruction* towards certain phrases within the English and French versions of *Harry Potter and the Sorcerer's Stone* in order to apply Charles Sanders Pierce's *semiotic theory* towards those phrases. By applying these methods, I created a model illustrating different paths that meanings follow as well as a model of the spell-casting process that exists in the *Harry Potter* series.

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

POSTER SESSION B

4-4:30 p.m.

Investigating the Interaction of GME with VTC3; Two Proteins Involved in One of the Ten Steps in the Biosynthesis of Ascorbic Acid in *Arabidopsis thaliana*

John Chodkowski, Senior, Biochemistry
Patricia Conklin, Biological Sciences

Arabidopsis thaliana is a key model organism for studying pathways that lead to proper plant functionality. As primary producers, plants biosynthesize all essential nutrients needed for carrying out metabolic processes. Of particular interest is the biosynthesis of ascorbic acid, more commonly known as vitamin C. Some mammals, including humans, are incapable of making their own vitamin C so they must ingest food that contains this antioxidant for protection from harmful free radical species produced endogenously as well as from external sources. Research in Dr. Conklin's lab focuses on one step of ten in the biosynthesis of vitamin C in plants. She previously discovered a regulatory protein (VTC3) that functions as a dual protein kinase::protein phosphatase, adding or removing phosphates to a particular substrate. In general this process is important in regulating protein activity amongst various processes occurring in a cell. Results from a yeast-two hybrid assay indicated that VTC3 interacts with an epimerase (GME) that catalyzes the conversion of GDP-mannose to GDP-L-galactose, in the ascorbic acid biosynthetic pathway. Long-term goals are to elucidate exactly how VTC3 is regulating GME. I had several projects during the course of the summer to help provide insight on the interaction between GME and VTC3:

1. Characterization of transgenic plants of different genetic backgrounds that are engineered to over-produce an epitope-tagged version of GME.
2. Affinity purification of tagged GME from transgenic plants for future enzymatic and MS analyses.
3. Co-immunoprecipitation of GME and VTC3
4. Analysis of the phosphorylation status of GME

Secondary CO2 Inclusions in Gore Mountain Garnet, North Creek, NY

Megan M. Ferguson, Senior, Geology/Economics
Robert S. Darling, Geology

Garnet from the Barton Mine, Gore Mountain, central Adirondacks, NY contains CO_2 fluid inclusions along healed conchoidal fractures. The inclusions are several 10's to 100's of micrometers in length. We obtained microthermometric data on 46 inclusions. All inclusions homogenized to the liquid phase at temperatures between -15.1 and -1.1°C, but 40 measurements (87%) occurred between -12.3 and -8.5°C. Therefore, 87% of the inclusions have densities between 0.995 and 0.975 gm/cm^3. Isochores for the forty CO_2 inclusions plot in a narrow range between 5183 and 5463 bars at 700°C. These pressure conditions are less than those proposed for garnet formation and suggest that CO_2 could have been trapped along an initial clockwise retrograde path assuming the trapping of pure CO_2. However, if the inclusions were originally trapped as a miscible H_2O+CO_2 phase, and lost H_2O through diffusion at high temperature, the bulk densities must have been higher and could have formed on a counter-clockwise path.

Origination and Evolutionary Dynamics of the End-Permian Post-Extinction Recovery Inferred from Longevities of Triassic Bivalve Species

Joseph Cataldo, Sophomore, Geology
Christopher McRoberts, Geology

Analyses on origination rates and longevities of Triassic bivalve species obtained from the Paleobiology Database provide insight into the evolutionary dynamics of the end-Permian mass extinction and subsequent biotic recovery. Triassic bivalve species longevities exhibit a strong positive skew and follow a lognormal distribution with a median duration of 9 Ma. Bivalve species longevity is negatively correlated with time of first appearance from the end-Permian event. Those originating in the Early Triassic exhibit greater variability and are shorter lived (median = 5.2 Ma) than species originating in the Middle Triassic (median duration = 13.5 Ma). Species originating in the Late Triassic are also short-lived (median = 5.1 Ma) due to range termination by the end-Triassic extinction. These data, although contrary to patterns of generic longevity, substantiate that species originating during the interval of high turnover during the Early Triassic exhibit shorter stratigraphic ranges than those originating later in the recovery.

SUNY Cortland 911 Emergency Call Research

Aleena Kanner, Senior, Kinesiology
Marley Barduhn, Assistant Provost for Teacher Education; SUNY Cortland EMS Advisor
Philip Buckenmeyer, Kinesiology

This research project shows the analysis of statistics of emergency calls on SUNY Cortland's Campus through the 2013-2014 academic year. The different types of charts were created as a visual reference to view the types of EMS calls, Total EMS Calls, EMS Transport Decision, Age Range of EMS calls, Dormitories/Location of EMS calls and the correlation of Dormitories/ Location and Substance Abuse EMS Calls. Information for this research is credited to SUNY Cortland Emergency Medical Services.

CONCURRENT SESSIONS III

4:30-5:30 p.m.

Beauties of the Sawdust Scented Ring: Circus Women Seen Through the Eyes of Mainstream Media: 1890-1920

Sarah Talbot, Senior, History
Randi Storch, History

Sarah Talbot analyzes three decades of media portrayals of women circus performers in the US, highlighting important issues of gender and class. Her paper was written for HIS 490 *Senior Seminar.*

Frances Perkins: The "Fussy" Madame Secretary

Stephanie Hopkins, Senior, History
Gigi Peterson, History

Stephanie Hopkins examines the gendered treatment of Frances Perkins, the Secretary of Labor who shaped New Deal policies. Her paper was written for HIS 490 *Senior Seminar.*

Protesting with Palestine: The International Solidarity Movement, 2001-2011

Melissa Howard, Senior, History
Gigi Peterson, History

Melissa Howard traces the evolution of the International Solidarity Movement, analyzing the forms and discourses of its pro-Palestinian activism. Her paper was written for HIS 490 Senior Seminar.

Caffeine Ingestion and Perceived Exertion during Submaximal Effort Lactate Threshold Exercise

Casey Austin, Senior, Exercise Science
Deborah Van Langen, Kinesiology

Caffeine ingestion prior to athletic events has been reported to enhance performance. Researchers have suggested that caffeine has little to no effect on VO_2 max or anaerobic threshold. The study is designed to determine if there are differences in the use of caffeine on lactate (mmol/L) concentrations during high intensity exercise **in athletes** habituated to caffeine compared to athletes caffeine naive. The purpose of this study will be to examine the effect of caffeine ingestion on rate of perceived exertion (RPE) and lactate (mmol/L) on college age students that are either habituated to caffeine or caffeine naive. The subjects (N = 10) will participate in two different running sessions determined by caffeine consumption or placebo while running at 90% of VO_2max. The study will be a double-blinded study consisting of two ANOVAs to determine if differences exist in caffeine consumption on RPE and lactate (mmol/L) concentration during high intensity exercise on the treadmill.

Nutrition Knowledge of College Student Athletes

Rebecca Sullinger, Senior, Exercise Science
Deborah Van Langen, Kinesiology

While student athletes are interested in nutrition, there is still the need for sports nutrition education among college athletes. Across the spectrum of collegiate athletes, there is a growing need for better education in the area of healthful eating and eating to maximize performance. The study is designed to determine the specific areas in which student-athletes lack nutritional knowledge. The purpose of this study will be to determine the nutritional knowledge of college student athletes at SUNY Cortland using a survey of knowledge and self-reported practices. The participants (N = 150) of college varsity athletes will be sent a survey that will consist of questions about specific nutritional knowledge and self-reported dietary habits. The data will be organized by sex, specific sport, and college year.

Effects of Exogenous and Endogenous Pre-Cooling on a 20-km Cycling Time Trial in the Heat

Nathan Barbour, Senior, Exercise Science
Deborah Van Langen, Kinesiology

It is well known that exercising in the heat can impair athletic performance. Exercising in the heat can disrupt central motor control, skeletal muscle recruitment, and muscle force output. Researchers have reported that pre-cooling prior to a bout of exercise in the heat can decrease the physiological effects of heat storage resulting in extended exercise time. The study is designed to determine if there are differences in three different pre-cooling protocols; cooling vest, ice slurry, and combination of both on cycling trials. The purpose of this study will be to examine the effects of pre-cooling techniques on a 20-kilometer cycling trial while exercising in the heat in college age fit students. The subjects (N = 12) will participate in three different cycling trials each using a different pre-cooling protocol. The study will be a repeated measure ANOVAs to determine if differences exist between precooling methods on heart rate (HR), skin (T_{sk}) and core body (T_c) temperatures, VO_2 (ml/kg/min), and rate of perceived exertion (RPE).

Integrate Technology Creatively into Curriculum to Enhance Children's Learning

Nick Penberthy, Junior, Childhood Education
Anthony Schiotis, Senior, Childhood Education
Shufang Shi, Childhood/Early Childhood Education

In today's 21st Century classroom, it is essential to creatively integrate technology into the curriculum in order to engage "Digital Natives" and enhance their learning. Many quality resources are available as applications on mobile learning devices and on the Internet. As a part of our technology integration course, we have explored and created learning activities for elementary classrooms. In this presentation we will showcase a few of these learning activities. These activities were created using Educreations, VoiceThread, and Edmodo. Educreations is an interactive whiteboard app that allows a teacher or a student to create a lesson with voiceover on iPads so that "anyone can teach what they know and learn what they don't." VoiceThread is both an app and a web tool that students can use to deliver messages and interact with peers, parents, and teachers using voice, video, or text. Edmodo is the so-called Facebook for classrooms. (References are omitted for space limitation.)

Costa Rica: Reflections on International Education Volunteer Experience

Rachel Kolod, Senior, Childhood/Early Childhood Education
Kristen Bobrik, Graduate, Literacy
Christina Lopilato, Junior, Childhood Education/Math
Caitlyn-Marie Clarke, Junior, Childhood Education
Amanda Candelaria, Junior, Early Childhood Education
Valerie Behr, Childhood/Early Childhood Education

During the Winter Session of 2014, students who are part of Kappa Delta Pi, an international education honor society, volunteered in Costa Rica working with children ages birth to 6. The aim of this presentation is to share reflections on working with high-risk children in an urban setting abroad while unable to speak their language, as well as providing workshops to local volunteers on best practices for child development. We will provide a comparative analysis of how our interactions within an international educational setting compare to our experiences working with children in the United States. Furthermore, we will reflect on our study abroad involvement and demonstrate the importance of exposing oneself to global educational experiences in relation to becoming a better educator.

***Encapsulation Technology for Increased Biosensor Stability**

Imani Sinclair, Senior, Biomedical Sciences
Theresa Curtis, Biological Sciences

Cell-based biosensors utilizing living cells have become a powerful way to detect chemical contaminants in the environment. A major limitation of using cell-based biosensors is the difficulty of maintaining cell viability for extended periods of time without a cell-culture specialist. This research involves the investigation of a possible solution to this limitation. In collaboration with Luna Innovations Incorporated, novel silica-based gels were formulated and used to encapsulate cells. Cells were treated with several formulations using different encapsulation techniques. The long term stability of each cell line was monitored by reading impedances using the Electric Cell-Substrate Impedance Sensing (ECIS) technology. Impedances of control cells and encapsulated cells were compared over time to determine if the encapsulation had a significant effect on the stability of cells. A single encapsulation formulation was shown to be the most effective at preserving the long-term shelf-life of a variety of vertebrate cells. These findings will pave the way to the development of a cell-based biosensor for field use.

***A Critical Discourse Analysis of "No Promo Homo" Policies in the United States**

Arron Bound, Senior, Inclusive Special Education
Brian Barrett, Foundations & Social Advocacy

This paper presents a critical discourse analysis of "no promo homo" (NPH) policies and their effects in American schools. NPH polices have been adopted across nine states and several local school districts in the USA. They direct school officials and teachers to take a "neutral" position on the subject of sexual orientation and identity and often restrict or prohibit any school-based instruction, counseling, discussion, or activity which could be construed as being positive about or promoting homosexuality. Our analysis suggests that NPH policies are potentially harmful both to students who identify as LGBT as well as to the broader school community. In an effort to ultimately promote healthier, more equitable school environments and experiences for all students, the paper aims to raise awareness about the problematic effects of NPH policy language and the assumptions that often underlie it.

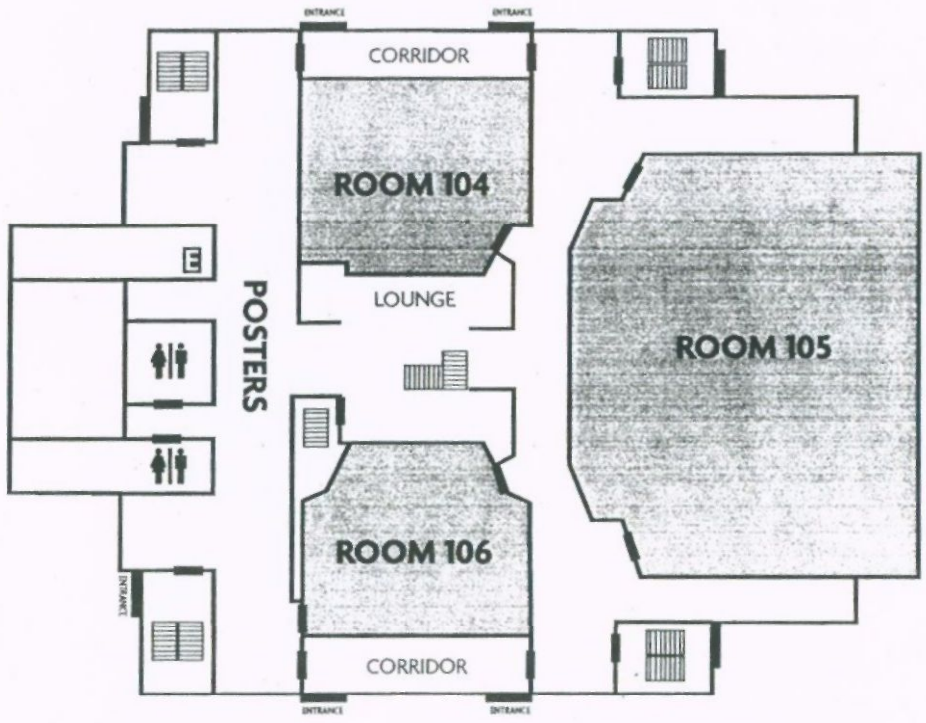
***Do Altitude Training Masks have an Effect on Lung Function and Cardiovascular Performance?**

Zachary Taillie, Senior, Exercise Science
James Hokanson, Kinesiology

Although lung volume is not considered a limiting factor of maximal aerobic exercise (VO_2max), several manufacturers have developed lung-training devices (LTD) and claim improvement in performance. The purpose of the study was to determine if a short exercise training program using an LTD would improve forced expiatory lung volume (FEV, FVC_1), cycling performance, VO_2max, or cycling efficiency. Volunteers (n=9) were randomly assigned to a lung-training group or control. Volunteers completed pre and post lung volume tests, a VO_2 cycle ergometer test, and an indoor 16 km cycle time trial. Training consisted of four weeks of aerobic exercise at 60% of maximal heart rate three times per week for a minimum of 30 minutes. Training increased FEV and FVC_1 by ~6% for control group and ~ 3% in LTD group. The four-week training program did not affect VO_2max or cycling efficiency in either group. Time trial performance did not vary between groups. It appears that LTD is not effective in improving performance following short-term training.

* Denotes students who received 2013 Undergraduate Research Council Summer Research Fellowships.

Map of Sperry Center



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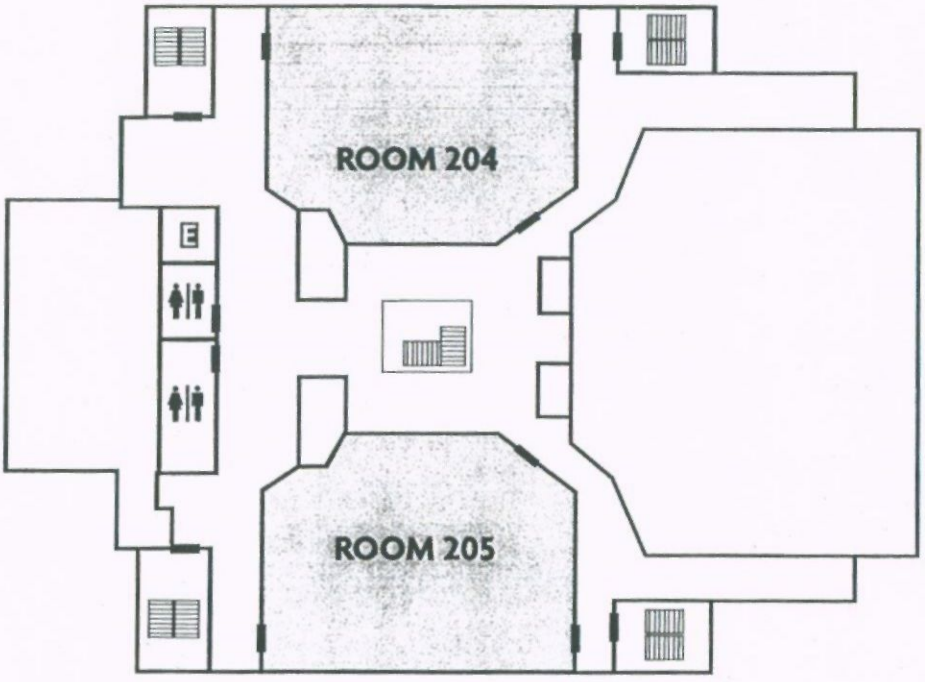

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